

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/042662

A. CLASSIFICATION

G01N29/02 G01N33/543 B01L3/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

GOIN BOIL

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document with indication, where appropriate of the relevant passages	Relevant to claim No
X	US 6 156 270 A (BUECHLER ET AL) 5 December 2000 (2000-12-05)	1,3-9, 11
Y	abstract; claims 1,2,28; figures 1-16B	2,12-19, 22,23, 26,27, 29-33, 35-37, 40-45
A	column 3, line 19 - column 8, line 65 column 15, line 44 - column 38, line 3 ----- -/--	10,20, 21,24, 25,28, 34,38,39

☒ Further documents are listed in the continuation of box C

☒ Patent family members are listed in annex

* Special categories of cited documents

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"A" document member of the same patent family

Date of the actual completion of the international search

17 November 2005

Date of mailing of the international search report

02. E 05

Name and mailing address of the ISA

European Patent Office, P B 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel (+31-70)340-2040, Tx 31 651 epo DI,
Fax (+31-70) 340-3016

Authorized officer

Uttenhaler, E

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/042662

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	J. W. GRATE, G. C. FRYE: "Acoustic Wave sensors" SENSORS UPDATE, EDITORS: H. BALTES, w. GOPEL, J. HESSE, vol. 2, 1996, pages 38-83, XP002334970 VCH-Verlag, Weinheim ISBN: 3-527-29432-5 page 45, paragraph 2.2.7; figures 2.1, 2.4; tables 2.1, 2.2	1, 2, 30, 45
Y	US 4 233 029 A (COLUMBUS ET AL) 11 November 1980 (1980-11-11) abstract; figure 1 column 1, line 5 - column 13, line 40	1
Y	US 2003/170881 A1 (DAVIS GRAHAM ET AL) 11 September 2003 (2003-09-11) abstract; figures 1-4 paragraph '0001 ! - paragraph '0059 !	1
Y	US 6 656 428 B1 (CLARK DAVID D ET AL) 2 December 2003 (2003-12-02) abstract; claims 1, 2, 19; figures 1, 2A, 5B column 7, line 1 - line 22 column 24, line 47 - column 27, line 18	12-19, 22, 23, 26, 27
Y	US 6 369 893 B1 (CHRISTEL LEE A ET AL) 9 April 2002 (2002-04-09) abstract; figures 1-4 column 7, line 16 - column 11, line 23	12, 23
Y	wo 02/088296 A (BOSTON BIOMEDICA, INC; SCHUMACHER, RICHARD, T; TAO, FENG; LAWRENCE, NA) 7 November 2002 (2002-11-07) abstract; figures 1, 2, 14-18 page 5, line 5 - line 10 page 21, line 10 - page 22, line 15	12, 23
Y	US 5 674 742 A (NORTHROP ET AL) 7 October 1997 (1997-10-07) abstract; figures 1-5 column 4, line 24 - column 12, line 8	29-33, 35-37, 40-45
Y	EP 0 657 737 A (HEWLETT-PACKARD COMPANY) 14 June 1995 (1995-06-14) abstract; figure 1 page 2, line 12 - page 3, line 47	29

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2004/042662

Box n Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons

- 1 ☐ Claims Nos
because they relate to subject matter not required to be searched by this Authority, namely
- 2 ☐ Claims Nos
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically
- 3 ☐ Claims Nos
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6 4(a)

Box m Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows

see additional sheet

- 1 ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all ~~searchable~~ claims
- 2 ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee
- 3 ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos
1-45
- 4 ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims, it is covered by claims Nos

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest

☒ No protest accompanied the payment of additional search fees

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1(part), 2-11

A system for detecting a target biological analyte comprising: a surface acoustic wave sensor, a capture agent located on a detection surface, a detection chamber, a waste chamber, means for driving the surface acoustic wave sensor, means for analyzing the coupling of an analyte and a fluid monitor solving the problem of monitoring flow characteristics in real time in the detection system.

2. claims: 1(part), 12-28

A system for detecting a target biological analyte comprising: a surface acoustic wave sensor, a capture agent located on a detection surface, a detection chamber, a waste chamber, means for driving the surface acoustic wave sensor, means for analyzing the coupling of an analyte and sealed modules containing liquids solving the problem of facilitating the detection of different target analytes.

3. claims: 29-45

A method of detecting a target biological analyte comprising: a detection system, contacting sample material with a mass modification agent and operating a surface acoustic wave device to detect attached mass-modified target biological analyte, solving the problem of effectively coupling the mass of the target biological analyte to the detection surface.

4. claims: 46-47

Shear horizontal surface acoustic wave sensor comprising: a piezoelectric substrate, a transducer with an acoustic path and a contact pad located off to a first side of the acoustic path, solving the problem of increasing the acoustic pathlength on a given substrate.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/042662

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 6156270	A	05-12-2000	US 6143576	A	07-11-2000
US 4233029	A	11-11-1980	CA 1119831	AI	16-03-1982
			DE 2965945	DI	25-08-1983
			EP 0014797	AI	03-09-1980
			JP 1196515	C	21-03-1984
			JP 55059326	A	02-05-1980
			JP 58026968	B	06-06-1983
			JP 55074462	A	05-06-1980
			JP 1248146	C	16-01-1985
			JP 55071942	A	30-05-1980
			JP 59021501	B	21-05-1984
US 2003170881	AI	11-09-2003	AU 2003220041	AI	22-09-2003
			CA 2478608	AI	18-09-2003
			EP 1481246	A2	01-12-2004
			JP 2005519304	T	30-06-2005
			wo 03076937	A2	18-09-2003
US 6656428	BI	02-12-2003	NONE		
US 6369893	BI	09-04-2002	NONE		
wo 02088296	A	07-11-2002	CA 2445587	AI	07-11-2002
			EP 1390466	AI	25-02-2004
			JP 2004536292	T	02-12-2004
US 5674742	A	07-10-1997	AU 5092193	A	29-03-1994
			EP 0711200	AI	15-05-1996
			JP 3002541	B2	24-01-2000
			JP 7508928	T	05-10-1995
			wo 9405414	AI	17-03-1994
			US 5646039	A	08-07-1997
			US 5639423	A	17-06-1997
EP 0657737	A	14-06-1995	JP 7209166	A	11-08-1995
			US 5527711	A	18-06-1996